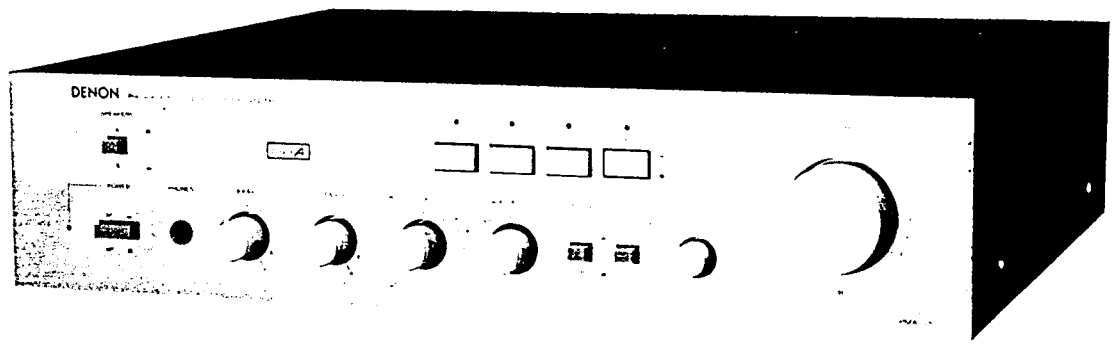
DENON

Hi-Fi Component Amplifier

SERVICE MANUAL

MODEL PMA-510



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NIPPON COLUMBIA CO., LTD.

SPECIFICATIONS

POWER AMPLIFIER SECTION

Circuit Type:	All stage direct DC servo circuit
Music Power:	55 W + 55 W (8 ohm Load 1 kHz) 90 W + 90 W (4 ohm Load 1 kHz)
Rated Output Power:	Both channel drive 20 Hz to 20 kHz 50 W + 50 W 1 kHz 50 W + 50 W (8 ohm Load THD 0.003%) 1 kHz 40 W + 40 W (4 ohm Load IEC) (Subject to change by temperature test)
Total Harmonic Wave:	0.009% (20 Hz – 20 kHz at –3 dB rated output)
Intermodulation Distortion:	Below 7 kHz/60 Hz : 1/4 0.004% (at amplitude output equivalent to 25 W)
Output Band Width:	5 Hz – 80 kHz (IHF. T.H.D 0.1%)
Transmission Characteristics:	4 Hz – 150 kHz $^{+0\ dB}_{-3\ dB}$ (at 1 W output)
Input Sensitivity:	150 mV
Input Impedance:	40 k ohm
Output Impedance:	0.13 ohm (1 kHz)
Output Terminals:	Speaker: load 4 – 16 ohm Headphone/Stereo headphone

EQUALIZER AMPLIFIER SECTION

Equalizer Amplifier Output: (REC OUT Terminal):	Maximum Output: 10 V (at 50 k ohm load) Rated Output: 150 mV Total harmonic wave distortion: below 0.002% (at 1 kHz, 6 V output)		
Input Sensitivity/Input Impedance:	PHONO	MM 2.5 mV	50 k ohm
		MC 0.25 mV	100 ohm
	TUNER	150 mV	40 k ohm
	AUX TAPE	150 mV	40 k ohm
Minimum Allowable Input:	PHONO	MM 160 mV (1 kHz)	
		MC 16 mV (1 kHz)	
RIAA Deviation:	PHONO	MM within ±0.3 dB (20 Hz – 100 kHz)	
		MC within ±0.3 dB (30 Hz – 100 kHz)	

OVERALL CHARACTERISTICS

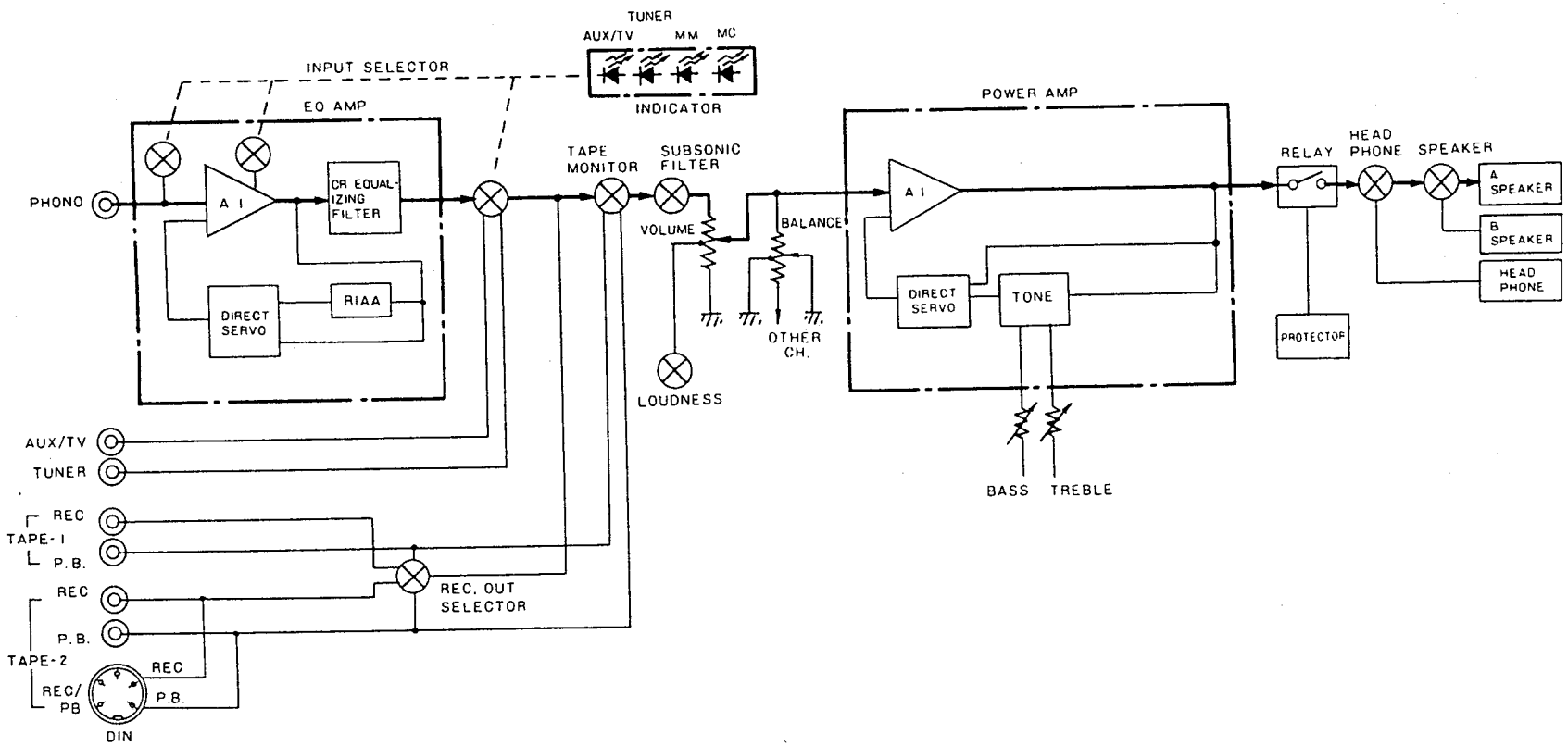
SN Ratio (IHFA Network):	PHONO	MM 86 dB (input terminals short-circuited)
		MC 67 dB (input terminals short-circuited)
	TUNER TAPE AUX	104 dB (input terminals short-circuited)
Tone Control Adjustable Range:	BASS	100 Hz ± 8 dB
	TREBLE	10 kHz ± 8 dB
Filtering Characteristics:	SUBSONIC	20 Hz, 6 dB/oct
Loudness Characteristics:	Low frequency	100 Hz + 7.5 dB
	High frequency	10 kHz + 5.5 dB

OTHERS:

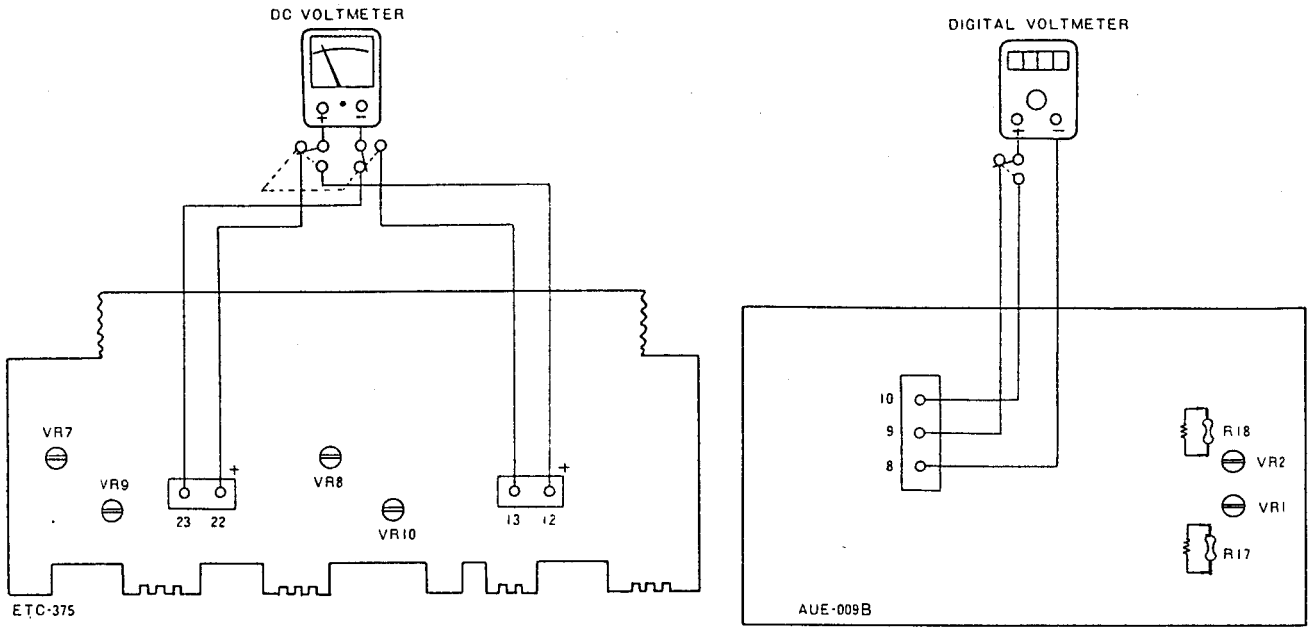
AC Outlet:	not included in systems for European use SWITCHED x 2, 100 W (Total) UNSWITCHED x 1, 250 W
Power Source:	Germany and France: AC 220 V, 50 Hz U.K.: AC 240 V, 50 Hz U.S.A.: AC 120 V, 60 Hz Hong Kong: AC 200 V, 50 Hz
Power Consumption:	UL: 130 W IEC: 395 W at maximum output
Dimensions:	434(W) x 112 (H) x 390 (D) mm (including rubber feet, control knobs, and terminals)
Weight:	9.2 kg

Design and specifications are subject to change without prior notice.

NOTE: The following codes correspond to the appropriate models.
E2 for Europe, EG for Germany, EF for France, EA for Australia, EK for U.K., EC for Canada, E3 for U.S.A.


TUNER
AUX/TV
MM
MC
INPUT SELECTOR
INDICATOR
EQ AMP
POWER AMP
PHONO
A 1
CR EQUAL-IZING FILTER
DIRECT SERVO
RIAA
TAPE MONITOR
SUBSONIC FILTER
VOLUME
BALANCE
OTHER CH.
LOUDNESS
A 1
DIRECT SERVO
TONE
BASS
TREBLE
RELAY
HEAD PHONE
SPEAKER
A SPEAKER
B SPEAKER
HEAD PHONE
PROTECTOR
AUX/TV
TUNER
TAPE-1
REC
P.B.
TAPE-2
REC
P.B.
REC/PB
REC. OUT SELECTOR
DIN

METHOD OF ADJUSTMENT



IDLE CURRENT ADJUSTMENT METHOD OF TONE & POWER AMP (ETC-375 PRINTED BOARD)

1. Place the unit in normal position, not sideways or tilted. Avoid too much ventilation, since the adjustment must be done where temperature is between 15°C and 30°C.

2. Set the switches on the unit as follows:
   Power → OFF
   Volume → $-\infty$ dB
   Speaker terminals → No load (no speaker connected)
3. Remove the top cover, and the VR7,8,9 and 10 of the tone & power amp printed board (2220609001) fully counter clockwise.
   Connect a DC voltmeter to the test points 12(+), 13(–) or to 22(+), 23(–).

4. Plug in the AC cord to power outlet of: Europe 220 V (198~231 V); U.K. and Australia 240 V (216~252 V); Canada and U.S.A. 120 V (180~126 V); and turn the power on.
   Immediately (within one minute), turn VR7 and VR8 clockwise and adjust the test point voltage (VTP) to 6±1 mV preliminarily.

5. After about two or three minutes of the above preliminary adjustment, adjust VR7 and VR8 so as VTP reads 6±1 mV.

6. Adjust VR9 and VR10 so as VTP reads 15±2 mV preliminarily.

7. About 4 minutes after the above preliminary adjustment, adjust VR9 and VR10 so as VTP reads 23±2 mV.

ADJUSTMENT OF EQUALIZER (AUE-009B PRINTED BOARD)

1. Insert short pins into PHONO input terminals.

2. Connect a digital voltmeter (0.01 mV ~ 1 mV DC range must be measurable) into each of REC. out terminals (L & R channels).

3. For easier measuring to avoid value fluctuation on the meter, connect a 100 k ohm (1/4W) resistor between the ends of the R17/18 10 M ohms (1/4W) resistor on the printed board.

4. Set the FUNCTION switch to "MM" position, and turn the main volume to MIN.

ADJUSTMENT

1. Turn POWER on, and after two minutes warming-up conduct the following adjustments.
2. Adjust VR1 (100 ohms semi-solid volume), so as the L-channel digital voltmeter reads 0.5 mV DC or less.
3. Adjust VR2 (100 ohms semi-solid volume), so as the R-channel digital voltmeter reads 0.5 mV DC or less.

NOTES ON SERVICING REMOTE SWITCH

A. How to remove control wire (TAPE MONITOR, REC OUT SELECTOR). (See Fig. 1)

(1) Do not handle Adapter pins (2) forcedly.
(2) Do not pull the wire to detach adapter.
(3) Procedure to remove.
  (a) Insert a small sized screwdriver for adjustment into the space between the adapter and the switch (Fig. 1), move the driver up and down slightly, and detach the adapter which is moved upward.
  (b) If no small sized screwdriver is available, move the adapter upward and detach it.
(4) Do not apply implement forcedly or the leg may break off.

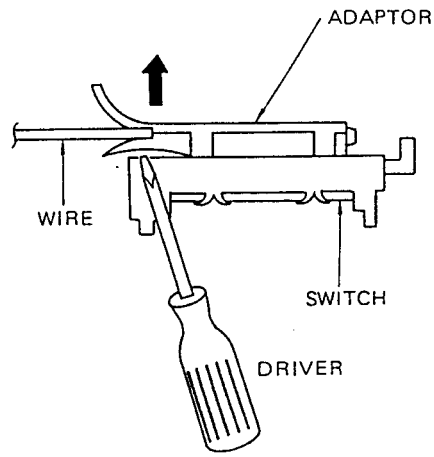


Fig. 1

B. HOW TO INSTALL CONTROL WIRE (See Fig. 2)

(1) Turn rotary control shaft on front panel side fully counterclockwise.
(2) Hold adapter on switch side, and move it to switch frame rear.
(3) Slide the switch in the direction of the control wire with a thin implement.
(4) Insert the adapter protrusions into the holes on the switch side. Then insert the adapter rods into the specified holes and simultaneously insert the stoppers into the stopper holes until they clocks.
(5) Turn the control to check.

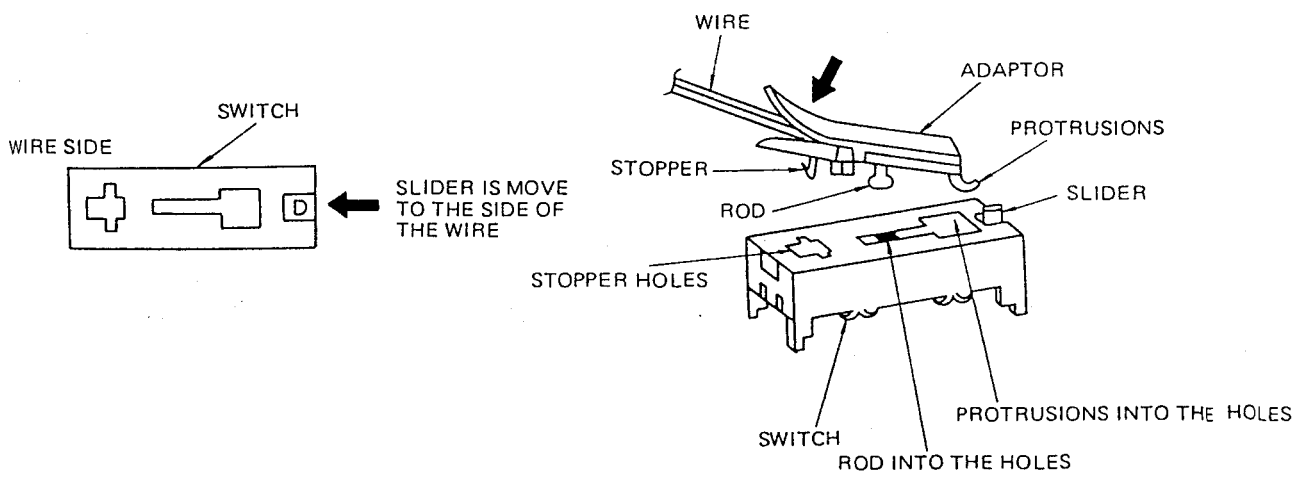
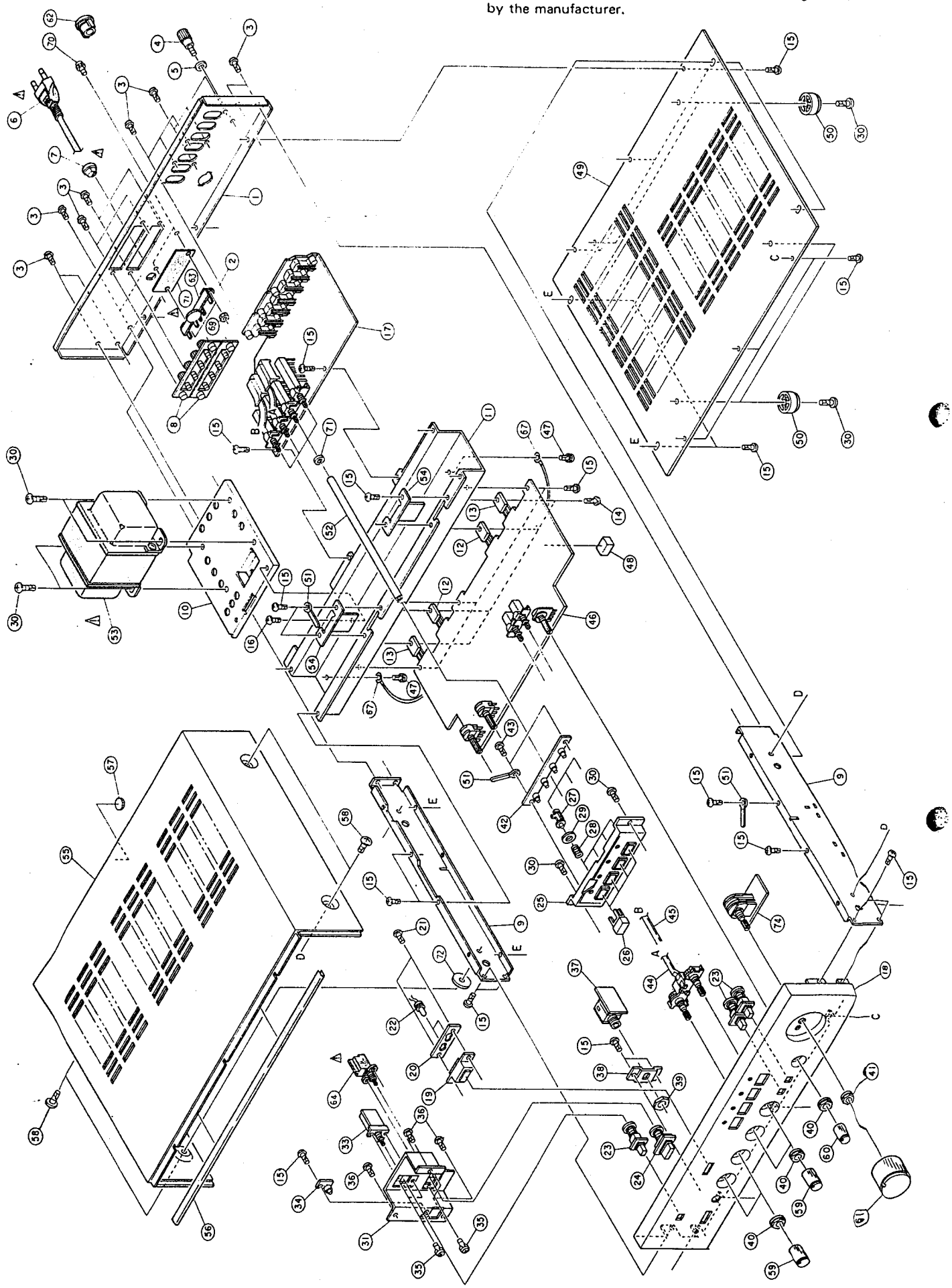


Fig. 2

EXPLODED VIEW OF CHASSIS AND CABINET

⚠ Means important safety item, which must be replaced, when necessary, by a part specified or meeting the specification by the manufacturer.



EXPLODED VIEW PARTS LIST

⚠ Means important safety item, which must be replaced, when necessary, by a part specified or meeting the specification by the manufacturer.

Note: See addendum list below for the parts with asterisk(*) on the Ref. No. and the other parts not included in this list.

Ref. No.	Part No.	Part Name & Descriptions
1	1050342005	BACK PANEL
2	—	—
3	4770064107	FIXING SCREW
4	2050071016	EARTH TERMINAL
5	4770018001	WASHER
⚠ *6	2062002031	AC CORD
⚠ *7	4450020005	CORD BUSH
8	2050061110	4P ANT. TERMINAL
9	4110216502	SIDE CHASSIS
10	4110246006	TRANS CHASSIS
11	4170122102	POWER RADIATOR
12	2710132020	TRANSISTOR 2SA1103(O)/(Y)
13	2730234021	TRANSISTOR 2SC2578(O)/(Y)
14	4700012022	CROSS PAN SCREW WITHS. WASHER 3x12
15	4730354019	TAPPING SCREW (2) 3x8
16	4730355018	TAPPING SCREW (2) 3x10
17	AUE-009B-1	EQ. AMP UNIT
18	2662PA005	FRONT PANEL SUB ASS.
19	1430163008	LENS
20	4120705008	LAMP BRACKET
21	4730456014	TAPPING SCREW (2) 4x12
22	3930048003	PILOT LAMP (PL1,2)
23	1130196003	PUSH KNOB ASS. (FOR SP. LOUDNESS, SUBSONIC)
24	1130196016	PUSH KNOB ASS. (FOR POWER SWITCH)
25	1140047003	PANEL BUSH (A) (FOR INPUT SELECT)
26	1130171219	PUSH KNOB ASS.
27	1190021008	STOPPER
28	4630220007	SPRING
29	1250009009	WASHER
30	4730455015	TAPPING SCREW (2) 4x10
31	4120617405	PANEL BRACKET
32	AUE-009B-3	POWER SWITCH UNIT
33	ETC-0357-5	SPEAKER SWITCH UNIT
34	ETC-0357-4	POWER LED UNIT
35	4700009006	CROSS PAN SCREW WITH S. WASHER 3x6
36	4730454016	TAPPING SCREW (2) 4x8

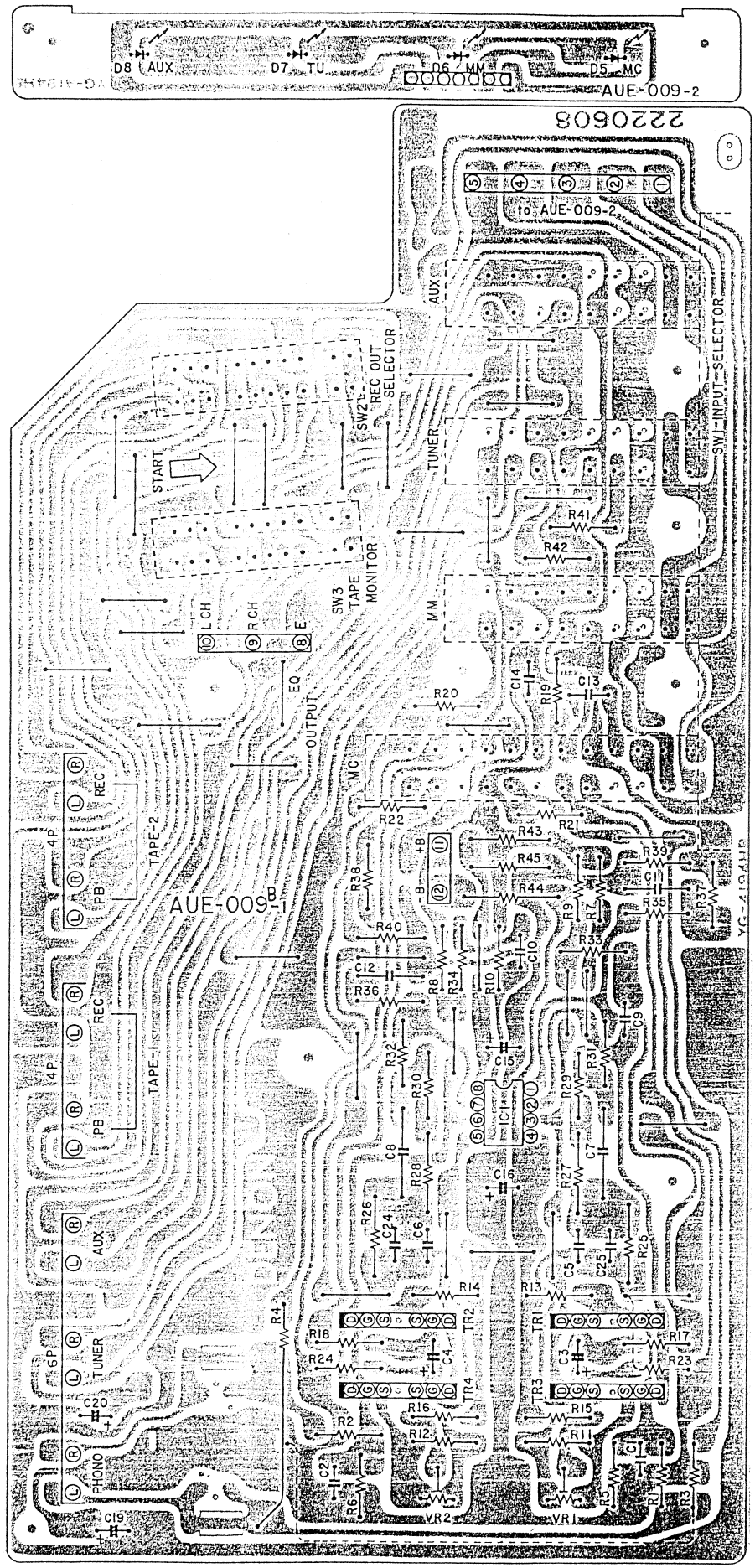
Ref. No.	Part No.	Part Name & Descriptions
37	ETC-0375-3	HEADPHONE JACK UNIT
38	4120484007	HEADPHONE BRACKET
39	—	NUT 12 mm (FOR HEADPHONE)
40	4770181006	SPECIAL NUT φ7
41	4770181019	SPECIAL NUT φ8 (FOR MAIN VOLUME)
42	AUE-009B-2	INPUT LED UNIT
43	4730304014	TAPPING SCREW (1) 3x8
44	2120169007	ROTARY REMOTE (A) (3 POSITION)
45	2120170009	ROTARY REMOTE (B) (4 POSITION)
46	ETC-0375-1	TONE CONTROL & POWER AMP UNIT
47	4700026018	TAPPING SCREW (2) WITH T. WASHER 3x8
48	4610121016	CUSHION
49	1050325006	BOTTOM COVER
50	1048001002	FOOT
51	EP-4772	CORD HOLDER
52	4430241105	CONNECTING SHAFT
⚠ *53	2335240009	POWER TRANS
54	4120690008	TRANSISTOR HOLD BRACKET
55	1020099003	TOP COVER
56	1220007057	SPACER
57	1040034006	STOPPER
58	4734801005	TAPPING SCREW TRUS (2) 4x8
59	1120321008	KNOB ASS. (A) (FOR MONITOR' REC OUT, TONE)
60	1120320009	KNOB ASS. (B) (FOR BALANCE)
61	1120265119	KNOB (FOR MAIN VOLUME)
62	2038084009	5P. CONNECTOR (DIN)
⚠ 63	2050089008	7P. W. TERMINAL
⚠ 64	2124154021	POWER SWITCH
65	2020013004	FUSE HOLDER
⚠ 66	2061015032	FUSE (2.5A)
67	2030184004	EARTH WIRE
68	5130159169	FUSE LABEL
69	4756006008	3 NUT
70	4700042005	CROSS PAN SCREW 3x8 BLACK
⚠ 71	4150088004	INSULATING SHEET
72	1250008110	WASHER
73	2538003014	CERAMIC CAP 0.0047μF 400V
74	ETC-0375-2	VOLUME UNIT

ADDENDUM LIST

Ref. No.	Part Name & Descriptions	EK For U.K.	EF For France		
⚠ 6	AC CORD	2062020000	2062002031		
⚠ 7	CORD BUSH	MD-2982H	4450020005		
⚠ 53	POWER TRANS	2335245004	2335240009		
—	VOLTAGE LABEL	5130362008	—		
—	BLIND SHEET	5130348006	—		
—	EARTH LABEL	5130140000	—		
—	3mm TOOTH WASHER	4753001051	—		
—	4mm TOOTH WASHER	4753100004	—		
—	CAUTION SHEET	5130364006	—		

PRINTED CIRCUIT BOARD PATTERNS AND PARTS LIST

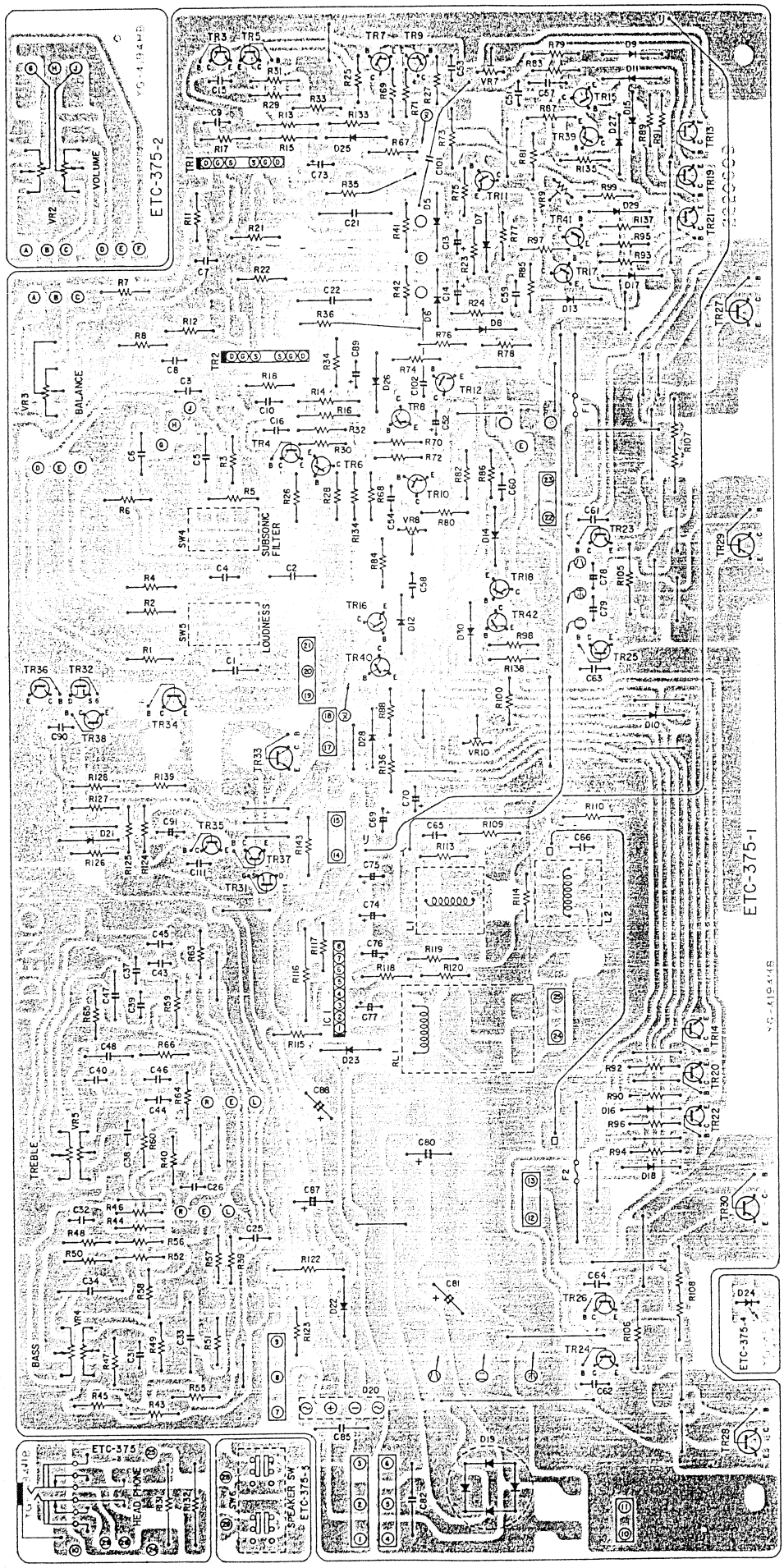
AUE-009B (For E2, EG, EK)



AUE-009B EQ AMP UNIT

Ref. No.	Part No.	Part Name & Descriptions
		SEMICONDUCTORS
IC01	2650030004	NJM4558D-D INTEGRATED CIRCUIT
TR01	2750024017	μPA68H (L) TRANSISTOR
TR02	2750024017	μPA68H (L) TRANSISTOR
TR03	2750024017	μPA68H (L) TRANSISTOR
TR04	2750024017	μPA68H (L) TRANSISTOR
D05	3939040002	TLG206 LIGHT EMITTING DIODE
D06	3939040002	TLG206 LIGHT EMITTING DIODE
D07	3939040002	TLG206 LIGHT EMITTING DIODE
D08	3939040002	TLG206 LIGHT EMITTING DIODE
		RESISTORS
R01	2412179909	10 ohm ±5% ¼W FIXED CARBON FILM
R02	2412179909	10 ohm ±5% ¼W FIXED CARBON FILM
R03	2412203901	100 ohm ±5% ¼W FIXED CARBON FILM
R04	2412068007	100 ohm ±5% ¼W FIXED CARBON FILM
R05	2412268904	51 k ohm ±5% ¼W FIXED CARBON FILM
R06	2412268904	51 k ohm ±5% ¼W FIXED CARBON FILM
R07	2412246900	6.2 k ohm ±5% ¼W FIXED CARBON FILM
R08	2412246900	6.2 k ohm ±5% ¼W FIXED CARBON FILM
R09	2412246900	6.2 k ohm ±5% ¼W FIXED CARBON FILM
R10	2412246900	6.2 k ohm ±5% ¼W FIXED CARBON FILM
R11	2412187904	22 ohm ±5% ¼W FIXED CARBON FILM
R12	2412187904	22 ohm ±5% ¼W FIXED CARBON FILM
R13	2412239904	3.3 k ohm ±5% ¼W FIXED CARBON FILM
R14	2412239904	3.3 k ohm ±5% ¼W FIXED CARBON FILM
R15	2412239904	3.3 k ohm ±5% ¼W FIXED CARBON FILM
R16	2412239904	3.3 k ohm ±5% ¼W FIXED CARBON FILM
R17	2420203003	10 M ohm ±10% ¼W FIXED CARBON COMPOSIT
R18	2420203003	10 M ohm ±10% ¼W FIXED CARBON COMPOSIT
R19	2412293908	560 k ohm ±5% ¼W FIXED CARBON FILM
R20	2412293908	560 k ohm ±5% ¼W FIXED CARBON FILM
R21	2412180901	11 ohm ±5% ¼W FIXED CARBON FILM
R22	2412180901	11 ohm ±5% ¼W FIXED CARBON FILM
R23	2412068007	100 ohm ±5% ¼W FIXED CARBON FILM
R24	2412203901	100 ohm ±5% ¼W FIXED CARBON FILM
R25	2412032046	4.7 k ohm ±2% ¼W FIXED CARBON FILM
R26	2412032046	4.7 k ohm ±2% ¼W FIXED CARBON FILM
R27	2412018044	56 k ohm ±2% ¼W FIXED CARBON FILM
R28	2412018044	56 k ohm ±2% ½W FIXED CARBON FILM
R29	2412215902	330 ohm ±5% ¼W FIXED CARBON FILM
R30	2412215902	330 ohm ±5% ¼W FIXED CARBON FILM
R31	2412186905	20 ohm ±5% ¼W FIXED CARBON FILM
R32	2412186905	20 ohm ±5% ¼W FIXED CARBON FILM
R33	2412213904	270 ohm ±5% ¼W FIXED CARBON FILM
R34	2412213904	270 ohm ±5% ¼W FIXED CARBON FILM
R35	2412210907	200 ohm ±5% ¼W FIXED CARBON FILM
R36	2412210907	200 ohm ±5% ¼W FIXED CARBON FILM
R37	2412210907	200 ohm ±5% ¼W FIXED CARBON FILM
R38	2412210907	200 ohm ±5% ¼W FIXED CARBON FILM
R39	2412275900	100 k ohm ±5% ¼W FIXED CARBON FILM
R40	2412275900	100 k ohm ±5% ¼W FIXED CARBON FILM
R41	2412203901	100 ohm ±5% ¼W FIXED CARBON FILM
R42	2412203901	100 ohm ±5% ¼W FIXED CARBON FILM
R43	2410188002	1.3 k ohm ±5% ½W FIXED CARBON FILM
R44	2442013035	910 ohm ±5% 1W FIXED METAL OXIDE FILM
R45	2410188002	1.3 k ohm ±5% ½W FIXED CARBON FILM
		CAPACITORS
C01	2534438900	120pF ±5% 50V FIXED CERAMIC
C02	2534438900	120pF ±5% 50V FIXED CERAMIC
C03	2541002002	6.8μF ±10% 6.3V FIXED PLASTIC FILM
C04	2541002002	6.8μF ±10% 6.3V FIXED PLASTIC FILM
C05	2551214903	0.015μF ±5% 50V FIXED PLASTIC FILM
C06	2551214903	0.015μF ±5% 50V FIXED PLASTIC FILM
C07	2554081023	0.056μF ±5% 100V FIXED PLASTIC FILM
C08	2554081023	0.056μF ±5% 100V FIXED PLASTIC FILM
C09	2534454900	560pF ±5% 50V FIXED CERAMIC
C10	2534454900	560pF ±5% 50V FIXED CERAMIC
C11	2551120055	0.0027μF ±5% 50V FIXED PLASTIC FILM
C12	2551120055	0.0027μF ±5% 50V FIXED PLASTIC FILM
C13	255112055	0.0027μF ±5% 50V FIXED PLASTIC FILM
C14	255112055	0.0027μF ±5% 50V FIXED PLASTIC FILM
C15	2544113901	4.7μF 35V FIXED ELECTROLYTIC
C16	2544030000	330μF 25V FIXED ELECTROLYTIC
C19	2544118906	0.47μF 50V FIXED ELECTROLYTIC
C20	2544118906	0.47μF 50V FIXED ELECTROLYTIC
C24	2534454900	560pF ±5% 50V FIXED CERAMIC
C25	2534454900	560pF ±5% 50V FIXED CERAMIC
		OTHER PARTS
	2220608002	P.W. BOARD
	2090042908	JUMPER WIRE USED 15
	2090008120	JUMPER (SHORTLEAD) P=10mm USED 14
	2090008117	JUMPER (SHORTLEAD) P=12.5mm USED 5
SW01	2124219005	4P. PUSH SWITCH
SW02	2124222005	SLIDE SWITCH (4 CIRCUIT, 4 POSITION)
SW03	2124222005	SLIDE SWITCH (4 CIRCUIT, 4 POSITION)
VR01	EP-5462H1	SOLID VOLUME 100 ohm
VR02	EP-5462H1	SOLID VOLUME 100 ohm
	2050087026	2P. TERMINAL P=7.5 mm USED 1
	2050087039	3P. TERMINAL P=7.5 mm USED 1
	2050087055	5P. TERMINAL P=7.5 mm USED 1
	2048021007	4P. CONNECTOR BASE FOR INPUT TAPE
	2040061007	6P. CONNECTOR BASE FOR INPUT PHONE

ETC-375 (For E2, EG, EF)



ETC-375 PARTS LIST

Ref. No.	Part No.	Part Name & Descriptions
		SEMICONDUCTORS
IC01	2630102004	HA12002W INTEGRATED CIRCUIT
TR01	2750018010	μPA68H (L) TRANSISTOR
TR02	2750018010	μPA68H (L) TRANSISTOR
TR03	2730198015	2SC1815 (BL) TRANSISTOR
TR04	2730198015	2SC1815 (BL) TRANSISTOR
TR05	2730198015	2SC1815 (BL) TRANSISTOR
TR06	2730198015	2SC1815 (BL) TRANSISTOR
TR07	2710131005	2SA988 (F) TRANSISTOR
TR08	2710131005	2SA988 (F) TRANSISTOR
TR09	2710131005	2SA988 (F) TRANSISTOR
TR10	2710131005	2SA988 (F) TRANSISTOR
TR11	2730235004	2SC1841 (F) TRANSISTOR
TR12	2730235004	2SC1841 (F) TRANSISTOR
TR13	2730198015	2SC1815 (BL) TRANSISTOR
TR14	2730198015	2SC1815 (BL) TRANSISTOR
TR15	2730235004	2SC1841 (F) TRANSISTOR
TR16	2730235004	2SC1841 (F) TRANSISTOR
TR17	2710131005	2SA988 (F) TRANSISTOR
TR18	2710131005	2SA988 (F) TRANSISTOR
TR19	2730198015	2SC1815 (BL) TRANSISTOR
TR20	2730198015	2SC1815 (BL) TRANSISTOR
TR21	2730198015	2SC1815 (BL) TRANSISTOR
TR22	2730198015	2SC1815 (BL) TRANSISTOR
TR23	2730226026	2SC2275(Q)/(R) TRANSISTOR
TR24	2730226026	2SC2275(Q)/(R) TRANSISTOR
TR25	2710123026	2SA985(Q)/(R) TRANSISTOR
TR26	2710123026	2SA985(Q)/(R) TRANSISTOR
TR31	2750018010	2SK30A(O) FIELD EFFECT TRANSISTOR
TR32	2750018010	2SK30A(O) FIELD EFFECT TRANSISTOR
TR33	2730177007	2SC1626(Y) TRANSISTOR
TR34	2710088006	2SA816 (Y) TRANSISTOR
TR35	2730198015	2SC1815 (BL) TRANSISTOR
TR36	2710102005	2SA1015 (Y) TRANSISTOR
TR37	2730235004	2SC1841 (F) TRANSISTOR
TR38	2710131005	2SA988 (F) TRANSISTOR
TR39	2710131005	2SA988 (F) TRANSISTOR
TR40	2710131005	2SA988 (F) TRANSISTOR
TR41	2730235004	2SC1841 (F) TRANSISTOR
TR42	2730235004	2SC1841 (F) TRANSISTOR
D05	2760253001	HZ15-2 DIODE
D06	2760253001	HZ15-2 DIODE
D07	2760171028	HV-23G (YL) DIODE
D08	2760171028	HV-23G (YL) DIODE
D09	2760049008	1S2076 DIODE
D10	276049008	1S2076 DIODE
D11	2760049011	1S2076A DIODE
D12	2760049011	1S2076A DIODE
D13	2760049011	1S2076A DIODE
D14	2760049011	1S2076A DIODE
D15	2760049008	1S2076 DIODE
D16	2760049008	1S2076 DIODE
D17	2760049008	1S2076 DIODE
D18	2760049008	1S2076 DIODE
D19	2760298008	M4C-41 DIODE
D20	2760246018	RB-152 DIODE
D21	2760253001	HZ15-2 DIODE
D22	2760191008	W03C DIODE
D23	2760049011	1S2076A DIODE
D24	3939032007	TLR206 LIGHT EMITTING DIODE
D25	2760253001	HZ15-2 DIODE
D26	2760253001	HZ15-2 DIODE
D27	2760049011	1S2076A DIODE
D28	2760049011	1S2076A DIODE
D29	2760049011	1S2076A DIODE
D30	2760049011	1S2076A DIODE
		RESISTORS
R01	2412203901	100 ohm ±5% ¼W FIXED CARBON FILM
R02	2412203901	100 ohm ±5% ¼W FIXED CARBON FILM
R03	2412262900	30 k ohm ±5% ¼W FIXED CARBON FILM
R04	2412262900	30 k ohm ±5% ¼W FIXED CARBON FILM
R05	2412246900	6.2 k ohm ±5% ¼W FIXED CARBON FILM
R06	2412246900	6.2 k ohm ±5% ¼W FIXED CARBON FILM
R07	2412227903	1 k ohm ±5% ¼W FIXED CARBON FILM
R08	2412227903	1 k ohm ±5% ¼W FIXED CARBON FILM
R11	2412203901	100 ohm ±5% ¼W FIXED CARBON FILM
R12	2412203901	100 ohm ±5% ¼W FIXED CARBON FILM
R13	2412035014	8.2 k ohm ±2% ¼W FIXED CARBON FILM
R14	2412035014	8.2 k ohm ±2% ¼W FIXED CARBON FILM
R15	2412035014	8.2 k ohm ±2% ¼W FIXED CARBON FILM
R16	2412035014	8.2 k ohm ±2% ¼W FIXED CARBON FILM

Ref. No.	Part No.	Part Name & Descriptions
R17	2412213904	270 ohm ±5% ¼W FIXED CARBON FILM
R18	2412213904	270 ohm ±5% ¼W FIXED CARBON FILM
R21	2412248908	7.5 k ohm ±5% ¼W FIXED CARBON FILM
R22	2412248908	7.5 k ohm ±5% ¼W FIXED CARBON FILM
R23	2412243903	4.7 k ohm ±5% ¼W FIXED CARBON FILM
R24	2412243903	4.7 k ohm ±5% ¼W FIXED CARBON FILM
R25	2442012065	820 ohm ±5% ½W FIXED METAL OXIDE FILM
R26	2442012065	820 ohm ±5% ½W FIXED METAL OXIDE FILM
R27	2442012065	820 ohm ±5% ½W FIXED METAL OXIDE FILM
R28	2442012065	820 ohm ±5% ½W FIXED METAL OXIDE FILM
R29	2412187904	22 ohm ±5% ¼W FIXED CARBON FILM
R30	2412187904	22 ohm ±5% ¼W FIXED CARBON FILM
R31	2412187904	22 ohm ±5% ¼W FIXED CARBON FILM
R32	2412187904	22 ohm ±5% ¼W FIXED CARBON FILM
R33	2412231902	1.5 k ohm ±5% ¼W FIXED CARBON FILM
R34	2412231902	1.5 k ohm ±5% ¼W FIXED CARBON FILM
R35	2412311000	4.7 M ohm ±5% ½W FIXED CARBON FILM
R36	2412311000	4.7 M ohm ±5% ½W FIXED CARBON FILM
R39	2412246900	6.2 k ohm ±5% ¼W FIXED CARBON FILM
R40	2412246900	6.2 k ohm ±5% ¼W FIXED CARBON FILM
R41	2412082009	390 ohm ±5% ¼W FIXED CARBON FILM
R42	2412082009	390 ohm ±5% ¼W FIXED CARBON FILM
R43	2412219908	470 ohm ±5% ¼W FIXED CARBON FILM
R44	2412219908	470 ohm ±5% ¼W FIXED CARBON FILM
R45	2412249907	8.2 k ohm ±5% ¼W FIXED CARBON FILM
R46	2412249907	8.2 k ohm ±5% ¼W FIXED CARBON FILM
R47	2412273902	82 k ohm ±5% ¼W FIXED CARBON FILM
R48	2412273902	82 k ohm ±5% ¼W FIXED CARBON FILM
R49	2412250909	9.1 k ohm ±5% ¼W FIXED CARBON FILM
R50	2412250909	9.1 k ohm ±5% ¼W FIXED CARBON FILM
R51	2412229901	1.2 k ohm ±5% ¼W FIXED CARBON FILM
R52	2412229901	1.2 k ohm ±5% ¼W FIXED CARBON FILM
R55	2412265907	39 k ohm ±5% ¼W FIXED CARBON FILM
R56	2412265907	39 k ohm ±5% ¼W FIXED CARBON FILM
R57	2412269903	56 k ohm ±5% ¼W FIXED CARBON FILM
R58	2412269903	56 k ohm ±5% ¼W FIXED CARBON FILM
R59	2412198906	62 ohm ±5% ¼W FIXED CARBON FILM
R60	2412198906	62 ohm ±5% ¼W FIXED CARBON FILM
R63	2412234909	2 k ohm ±5% ¼W FIXED CARBON FILM
R64	2412234909	2 k ohm ±5% ¼W FIXED CARBON FILM
R65	2412214903	300 ohm ±5% ¼W FIXED CARBON FILM
R66	2412214903	300 ohm ±5% ¼W FIXED CARBON FILM
R67	2442012052	68 ohm ±5% ½W FIXED METAL OXIDE FILM
R68	2442012052	68 ohm ±5% ½W FIXED METAL OXIDE FILM
R69	2412179909	10 ohm ±5% ¼W FIXED CARBON FILM
R70	2412179909	10 ohm ±5% ¼W FIXED CARBON FILM
R71	2412179909	10 ohm ±5% ¼W FIXED CARBON FILM
R72	2412179909	10 ohm ±5% ¼W FIXED CARBON FILM
R73	2410201002	4.7 k ohm ±5% ½W FIXED CARBON FILM
R74	2410201002	4.7 k ohm ±5% ½W FIXED CARBON FILM
R75	2412207907	150 ohm ±5% ¼W FIXED CARBON FILM
R76	2412207907	150 ohm ±5% ¼W FIXED CARBON FILM
R77	2412207907	150 ohm ±5% ¼W FIXED CARBON FILM
R78	2412207907	150 ohm ±5% ¼W FIXED CARBON FILM
R79	2412219908	470 ohm ±5% ¼W FIXED CARBON FILM
R80	2412219908	470 ohm ±5% ¼W FIXED CARBON FILM
R81	2412227903	1 k ohm ±5% ¼W FIXED CARBON FILM
R82	2412227903	1 k ohm ±5% ¼W FIXED CARBON FILM
R83	2442021056	1 k ohm ±5% ½W FIXED METAL OXIDE FILM
R84	2442021056	1 k ohm ±5% ½W FIXED METAL OXIDE FILM
R85	2442021056	1 k ohm ±5% ½W FIXED METAL OXIDE FILM
R86	2442021056	1 k ohm ±5% ½W FIXED METAL OXIDE FILM
R87	2442021043	620 ohm ±5% ½W FIXED METAL OXIDE FILM
R88	2442021043	620 ohm ±5% ½W FIXED METAL OXIDE FILM
R89	2412232901	1.6 k ohm ±5% ¼W FIXED CARBON FILM
R90	2412232901	1.6 k ohm ±5% ¼W FIXED CARBON FILM
R91	2412227903	1 k ohm ±5% ¼W FIXED CARBON FILM
R92	2412227903	1 k ohm ±5% ¼W FIXED CARBON FILM
R93	2412232901	1.5 k ohm ±5% ¼W FIXED CARBON FILM
R94	2412232901	1.6 k ohm ±5% ¼W FIXED CARBON FILM

(Con.)

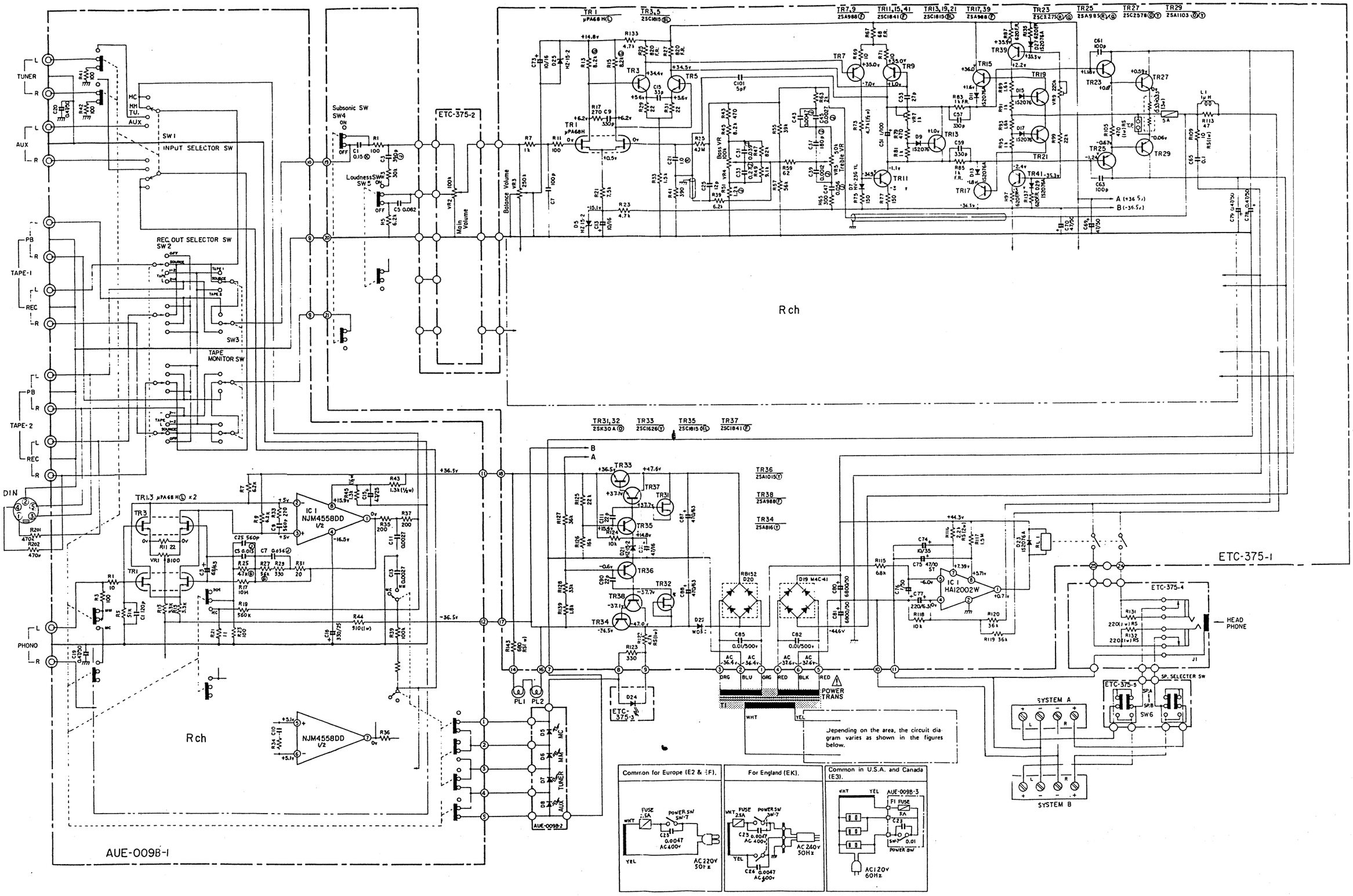
Ref. No.	Part No.	Part Name & Descriptions
R95	2412227903	1 k ohm ±5% ¼W FIXED CARBON FILM
R96	2412227903	1 k ohm ±5% ¼W FIXED CARBON FILM
R97	2442021043	620 ohm ±5% ½W FIXED METAL OXIDE FILM
R98	2442021043	620 ohm ±5% ½W FIXED METAL OXIDE FILM
R99	2412259900	22 k ohm ±5% ¼W FIXED CARBON FILM
R100	2412259900	22 k ohm ±5% ¼W FIXED CARBON FILM
R105	2440037026	470 ohm ±5% 1W FIXED METAL OXIDE FILM
R106	2440037026	470 ohm ±5% 1W FIXED METAL OXIDE FILM
R107	2432026016	0.33 ohm ±10% 3.15W FIXED WIRE WOUND
R108	2432026016	0.33 ohm ±10% 3.15W FIXED WIRE WOUND
R109	2440017020	10 ohm ±5% 1W FIXED METAL OXIDE FILM
R110	2440017020	10 ohm ±5% 1W FIXED METAL OXIDE FILM
R113	2412195909	47 ohm ±5% ¼W FIXED CARBON FILM
R114	2412195909	47 ohm ±5% ¼W FIXED CARBON FILM
R115	2412112005	6.8 k ohm ±5% ¼W FIXED CARBON FILM
R116	2440102029	2.2 k ohm ±5% 2W FIXED METAL OXIDE FILM
R117	2412303908	1.5 M ohm ±5% ¼W FIXED CARBON FILM
R118	2412251908	10 k ohm ±5% ¼W FIXED CARBON FILM
R119	2412264908	36 k ohm ±5% ¼W FIXED CARBON FILM
R120	2412264908	36 k ohm ±5% ¼W FIXED CARBON FILM
R122	2440049027	4.7 k ohm ±5% 1W FIXED METAL OXIDE FILM
R123	2412215902	330 ohm ±5% ¼W FIXED CARBON FILM
R124	2412251908	10 k ohm ±5% ¼W FIXED CARBON FILM
R125	2412259900	22 k ohm ±5% ¼W FIXED CARBON FILM
R126	2412256903	16 k ohm ±5% ¼W FIXED CARBON FILM
R127	2412264908	36 k ohm ±5% ¼W FIXED CARBON FILM
R128	2412263909	33 k ohm ±5% ¼W FIXED CARBON FILM
R131	2440033020	220 ohm ±5% 1W FIXED METAL OXIDE FILM
R132	2440033020	220 ohm ±5% 1W FIXED METAL OXIDE FILM
R133	2412243903	4.7 k ohm ±5% ¼W FIXED CARBON FILM
R134	2412243903	4.7 k ohm ±5% ¼W FIXED CARBON FILM
R135	2442021043	620 ohm ±5% ½W FIXED METAL OXIDE FILM
R136	2442021043	620 ohm ±5% ½W FIXED METAL OXIDE FILM
R137	2442021043	620 ohm ±5% ½W FIXED METAL OXIDE FILM
R138	2442021043	620 ohm ±5% ½W FIXED METAL OXIDE FILM
R139	2412233900	1.8 k ohm ±5% ¼W FIXED CARBON FILM
R143	2440096025	680 ohm ±5% 2W FIXED METAL OXIDE FILM
		CAPACITORS
C01	2551086005	0.15μF ±10% 50V FIXED PLASTIC FILM
C02	2551086005	0.15μF ±10% 50V FIXED PLASTIC FILM
C03	2534450904	390pF ±5% 50V FIXED CERAMIC
C04	2554450904	390pF ±5% 50V FIXED CERAMIC
C05	2551083008	0.082μF ±10% 50V FIXED PLASTIC FILM
C06	2551083008	0.082μF ±10% 50V FIXED PLASTIC FILM
C07	2534436902	100pF ±5% 50V FIXED CERAMIC
C08	2534436902	100pF ±5% 50V FIXED CERAMIC
C09	2534448903	330pF ±5% 50V FIXED CERAMIC
C10	2534448903	330pF ±5% 50V FIXED CERAMIC
C13	2544015009	10μF 16V FIXED ELECTROLYTIC
C14	2544015009	10μF 16V FIXED ELECTROLYTIC
C15	2534424901	33pF ±5% 50V FIXED CERAMIC
C16	2534424901	33pF ±5% 50V FIXED CERAMIC
C21	2561008060	1μF 100V FIXED METALIZED
C22	2561008060	1μF 100V FIXED METALIZED
C25	2533605006	12pF ±5% 50V FIXED CERAMIC
C26	2534414908	12pF ±5% 50V FIXED CERAMIC
C31	2551219908	0.039μF ±5% 50V FIXED PLASTIC FILM
C32	2551219908	0.039μF ±5% 50V FIXED PLASTIC FILM
C33	2551122095	0.27μF ±5% 50V FIXED PLASTIC FILM
C34	2551122095	0.27μF ±5% 50V FIXED PLASTIC FILM
C37	2534442909	180pF ±5% 50V FIXED CERAMIC
C38	2534442909	180pF ±5% 50V FIXED CERAMIC
C39	2551201903	0.0012μF ±5% 50V FIXED PLASTIC FILM
C40	2551201903	0.0012μF ±5% 50V FIXED PLASTIC FILM

Ref. No.	Part No.	Part Name & Descriptions
C43	2551208906	0.0047μF ±5% 50V FIXED PLASTIC FILM
C44	2551208906	0.0047μF ±5% 50V FIXED PLASTIC FILM
C45	2551205909	0.0027μF ±5% 50V FIXED PLASTIC FILM
C46	2551205909	0.0027μF ±5% 50V FIXED PLASTIC FILM
C47	2551122011	0.056μF ±5% 50V FIXED PLASTIC FILM
C48	2551122011	0.056μF ±5% 50V FIXED PLASTIC FILM
C51	2544060025	1μF 100V FIXED ELECTROLYTIC
C52	2544060025	1μF 100V FIXED ELECTROLYTIC
C53	2534480903	27pF ±5% 500V FIXED CERAMIC
C54	2534480903	27pF ±5% 500V FIXED CERAMIC
C57	2533639001	330pF ±5% 50V FIXED CERAMIC
C58	2534448903	330pF ±5% 50V FIXED CERAMIC
C59	2534448903	330pF ±5% 50V FIXED CERAMIC
C60	2534448903	330pF ±5% 50V FIXED CERAMIC
C61	2531124903	100pF ±10% 500V FIXED CERAMIC
C62	2531124903	100pF ±10% 500V FIXED CERAMIC
C63	2531124903	100pF ±10% 500V FIXED CERAMIC
C64	2531124903	100pF ±10% 500V FIXED CERAMIC
C65	2551084007	0.1μF ±10% 50V FIXED PLASTIC FILM
C66	2551084007	0.1μF ±10% 50V FIXED PLASTIC FILM
C69	2544126901	47μF 50V FIXED ELECTROLYTIC
C70	2544049004	47μF 50V FIXED ELECTROLYTIC
C73	2544105906	10μF 16V FIXED ELECTROLYTIC
C74	2544114900	10μF 35V FIXED ELECTROLYTIC
C75	2549015017	47μF ±20% 10V FIXED ELECTROLYTIC
C76	2544119905	1μF 50V FIXED ELECTROLYTIC
C77	2544100901	220μF 6.3V FIXED ELECTROLYTIC
C78	2544118906	0.47μF 50V FIXED ELECTROLYTIC
C79	2544043000	0.47μF 50V FIXED ELECTROLYTIC
C80	2546051003	6800μF 50V FIXED ELECTROLYTIC
C81	2546051003	6800μF 50V FIXED ELECTROLYTIC
C82	2531053003	0.01μF +100,−0% 500V FIXED CERAMIC
C85	2531053003	0.01μF +100,−0% 500V FIXED CERAMIC
C87	2544059094	470μF 63V FIXED ELECTROLYTIC
C88	2544059094	470μF 63V FIXED ELECTROLYTIC
C89	2544105906	10μF 16V FIXED ELECTROLYTIC
C90	2534420905	22pF 50V FIXED CERAMIC
C91	2544108903	47μF 16V FIXED ELECTROLYTIC
C101	2533598003	5pF ±0.5pF 50V FIXED CERAMIC
C102	2533598003	5pF ±0.5pF 50V FIXED CERAMIC
C111	2534420905	22pF ±5% 50V FIXED CERAMIC
		OTHER PARTS
	2220609001	P.W. BOARD
	2090042908	JUMPER WIRE USED 25
	2090008120	JUMPER WIRE (SHORTLEAD) P=10 mm USED 8
	2090008104	JUMPER WIRE (SHORTLEAD) P=15 mm USED 4
	2090008162	JUMPER WIRE (SHORTLEAD) P=20 mm USED 2
	2050087026	2P. TERMINAL P=7.5 mm USED 6
	2050087039	3P. TERMINAL P=7.5 mm USED 3
	2050082034	3P. TERMINAL P=5 mm USED 1
VR02	211244000	VARIABLE RESISTOR 100 k ohm FOR VOLUME
VR03	2110245009	VARIABLE RESISTOR 250 k ohm FOR BALANCE
VR04	2110246011	VARIABLE RESISTOR 100 k ohm FOR BASS
VR05	2110253004	VARIABLE RESISTOR 50 k ohm FOR TREBLE
VR07	EP-5462H7	SOLID VOLUME 1 k ohm
VR08	EP-5462H7	SOLID VOLUME 1 k ohm
VR09	EP-5462H21	SOLID VOLUME 220 k ohm
VR10	EP-5462H21	SOLID VOLUME 220 k ohm
SW04	2124220007	2P. PUSH SWITCH S. FIL.
SW05	2124220007	2P. PUSH SWITCH LOUDNESS
SW06	2124221006	1P. PUSH SWITCH FOR SPEAKER
F01	EP-713210	FUSE (5A)
F02	EP-713210	FUSE (5A)
	EP-5870	FUSE HOLDER USED 4
J01	2048011101	HEADPHONE JACK
L01	2320017001	INDUCTOR 1μH
L02	2320017001	INDUCTOR 1μH
RL01	2140037009	RELAY
	4170021009	RADIATOR FOR TR33,34
	4730354019	TAPPING SCREW 3x8
	FEP-1261	JUMPER WIRE USED 2

PMA-510

SCHEMATIC CIRCUIT DIAGRAM (FOR E2, EF)

⚠ Means important safety item, which must be replaced, when necessary, by a part specified or meeting the specification by the manufacturer.



DENON

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